



(3 Hours)

[Total Marks : 80]

- N.B: (1) Question no.1 is **compulsory**
 (2) Solve any **three** from remaining questions
 (3) Assume **suitable** data if **necessary**
 (4) **Figures** to the right indicate full marks

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1. Solve any 4: 20
- (a) Draw an inverting and non-inverting amplifier. Write their gain equations.
- (b) Draw the VI characteristics of SCR and define the terms latching current and holding current.
- (c) Implement basic gates using NAND gate.
- (d) What is BLDC motor? List its applications.
- (e) Compare microprocessors and microcontrollers.
- 2.(a) Draw and explain single phase full wave fully controlled rectifier with the help of waveforms for R load. 7
- (b) Illustrate how a DIAC- TRIAC pair can be used for controlling the illumination of a bulb. 7
- (c) Compare AC and DC motors. 6
- 3.(a) Explain Instrumentation amplifier. List its applications. 7
- (b) With neat circuit diagram and waveforms, explain the working principle of single phase bridge inverter circuit. 7
- (c) Select motors for medium power pump and conveyor applications. 6
- 4.(a) List the different applications of a microcontroller. Explain any one in detail. 7
- (b) Explain with block diagram IC555 timer as monostable multivibrator. 7
- (c) Explain GTO. How does it differ from an SCR. 6
- 5.(a) Classify the commutation methods of SCR. Explain any one in detail. 7
- (b) Explain encoder and decoder in digital circuits. Enlist their applications. 7
- (c) Give an overview of a generic microprocessor. 6
- 6.(a) Explain the different peripherals of MSP430 microcontroller. 7
- (b) Explain 180° mode of conduction for a three phase bridge inverter circuit. 7
- (c) With respect to digital circuits, define the following terms: Noise Immunity, Fan Out and Propagation Delay. 6